

CLAIMS

1. A disk augmentation system comprising:
a first support for mounting onto a first vertebra in a spinal cord;
a second support for mounting onto a second vertebra;
said first and second supports being located exterior to a disk area between said first and second vertebrae and cooperating to define a compression body area for receiving a compression body; and
said first and second supports supporting said compression body exterior to said disk area.
2. The disk augmentation system as recited in claim 1 wherein said first support comprises a first planar member and said second support comprises a second planar member, said first and second planar members being in a generally parallel relationship after said first and second supports are mounted onto said first and second vertebrae, respectively.
3. The disk augmentation system as recited in claim 2 wherein said first and second planar members are situated at a predetermined angle relative to an axis of said spinal cord.
4. The disk augmentation system as recited in claim 3 wherein said predetermined angle is approximates the angle between the facet joint articulation and the long axis of the spine and/or the spinous processes and the long axis of the spine.
5. The disk augmentation system as recited in claim 3 wherein said predetermined angle is approximately 30 degrees.
6. The disk augmentation system as recited in claim 1 wherein said retainer system comprises an adjustable tensioner.

7. The disk augmentation system as recited in claim 6 wherein said adjustable tensioner comprises a screw for adjustably tightening and securing said first support to said second support.

8. The disk augmentation system as recited in claim 1 wherein said compression body is selected from a supply of a plurality of compression bodies, said plurality of compression bodies comprising different predetermined densities.

9. The disk augmentation system as recited in claim 1 wherein said compression body is selected from a supply of a plurality of compression bodies, said plurality of compression bodies comprising different predetermined shapes.

10. The disk augmentation system as recited in claim 1 wherein said system comprises a third support that cooperates with said first and second supports to support said first and second vertebrae when they move in opposite directions.

11. The disk augmentation system as recited in claim 10 wherein said third support and at least one of said first or second supports defines a second compression body receiving area for receiving a second compression body.

12. The disk augmentation system as recited in claim 11 wherein said first support comprises a first planar member, said second support comprises a second planar member, and said third support comprises a third planar member, said first, second and third planar members being in a generally parallel relationship after said first, second and third supports are mounted on said first and second vertebrae.

13. The disk augmentation system as recited in claim 12 wherein said first, second and third generally planar members generally parallel and are situated at a predetermined angle relative to said spinal cord.

14. The disk augmentation system as recited in claim 13 wherein said predetermined angle is acute.

15. The disk augmentation system as recited in claim 13 wherein said predetermined angle is approximately 30 degrees.

16. The disk augmentation system as recited in claim 10 wherein said system comprises an adjustable tensioner.

17. The disk augmentation system as recited in claim 16 wherein said adjustable tensioner comprises a screw for adjustably tightening and securing said first support to said second support.

18. The disk augmentation system as recited in claim 10 wherein said compression body and said second compression body are selected from a supply of a plurality of compression bodies, said plurality of compression bodies comprising different predetermined densities.

19. The disk augmentation system as recited in claim 10 wherein said compression body and said second compression body are selected from a supply of a plurality of compression bodies, said plurality of compression bodies comprising different predetermined shapes.

20. The disk augmentation system as recited in claim 19 wherein said different predetermined shapes comprise multi-sided, quadrangular or triangular profile.

21. The disk augmentation system as recited in claim 11 wherein said compression body and said second compression body are generally quadrangular, rectangular, circular or elliptical.

22. The disk augmentation system as recited in claim 9 wherein at least one of said first vertebra or said second vertebra is fused to a third vertebra.

23. The disk augmentation system as recited in claim 1, wherein said system further comprises:

- a fourth support for mounting onto the first vertebrae;
- a fifth support for mounting onto said second vertebrae;
- said fourth and fifth supports cooperating to define a second compression body area for receiving a second compression body; and
- a retainer for retaining said compression between said first and second supports and exterior and in operative relationship to a disk area between said first and second vertebrae.

24. The disk augmentation system as recited in claim 23, wherein said system further comprises:

- a bracket for coupling said fourth and fifth supports in a spaced relationship.

25. The disk augmentation system as recited in claim 23, wherein said fourth and fifth supports are situated adjacent to each other in a plane that generally corresponds to a patient's intervertebral disk.

26. An adjustable compression system for mounting to a plurality of vertebrae:
a support for mounting on the vertebrae of a spinal column; and
a retainer situated exterior of said spinal column for retaining a compression body outside a native disk space and an axis of the spine;
said frame and compression retainer facilitating reducing loading of at least one disk in said spinal column.
27. The adjustable compression system as recited in claim 26 wherein said retainer comprises a first support and a second support for mounting to said spinal column.
28. The adjustable compression system as recited in claim 26 wherein said system comprises at least one fastener that is adjustable to permit loading said compression body with a predetermined amount of pressure.
29. The adjustable compression system as recited in claim 28 wherein said predetermined amount of pressure is on the order of the physiological pressures upon the native intervertebral disk.
30. The adjustable compression system as recited in claim 27 wherein said first support and said second support are generally planar.
31. The adjustable compression system as recited in claim 27 wherein said first support comprises a first mount for securing to a first vertebra and said second support comprises a second mount for securing to a second vertebra;
said first and second supports each comprising a latch for mounting on said first mount and said second mount, respectively, said adjustable compression system further comprising:
a plurality of fasteners for securing said first and second supports onto a first mount and a second mount, respectively, after said first and second mounts are mounted onto said first and second mounts.

32. The adjustable compression system as recited in claim 31 wherein said first and second mounts comprise at least one cylindrical support mounted onto said first and second vertebrae, respectively, with at least one screw.

33. The adjustable compression system as recited in claim 27 wherein said first support comprises a first planar member and said second support comprises a second planar member, said first and second planar members being in a generally parallel relationship after said first and second supports are mounted on said first and second vertebrae, respectively.

34. The adjustable compression system as recited in claim 33 wherein said first and second planar members are situated at a predetermined angle relative to said spinal cord.

35. The adjustable compression system as recited in claim 34 wherein said predetermined angle face is acute.

36. The adjustable compression system as recited in claim 34 wherein said predetermined angle face is approximately 30 degrees.

37. The adjustable compression system as recited in claim 26 wherein said compression body is selected from a supply of a plurality of compression bodies, said plurality of compression bodies comprising different predetermined densities.

38. The adjustable compression system as recited in claim 26 wherein said compression body is selected from a supply of a plurality of compression bodies, said plurality of compression bodies comprising different predetermined shapes.

39. The adjustable compression system as recited in claim 27 wherein said system comprises a third support that cooperates with said first and second supports to facilitate reducing load on at least one native disk when said first and second vertebrae move in opposite directions.

40. The adjustable compression system as recited in claim 39 wherein said third support and at least one of said first or second supports defines a second compression body receiving area for receiving a second compression body.

41. The adjustable compression system as recited in claim 40 wherein said first support comprises a first planar member, said second support comprises a second planar member, and said third support comprises a third planar member, said first, second and third supports being in a generally parallel relationship after said first, second and third supports are mounted on said frame.

42. The adjustable compression system as recited in claim 41 wherein said first, second and third planar members are situated at a predetermined angle relative to said spinal cord.

43. The adjustable compression system as recited in claim 42 wherein said predetermined angle is an acute angle.

44. The adjustable compression system as recited in claim 43 wherein said predetermined angle is less than 60 degrees.

45. The adjustable compression system as recited in claim 41 wherein said system comprises at least one fastener that is adjustable to permit loading said compression body with a predetermined amount of pressure.

46. The adjustable compression system as recited in claim 45 wherein said at least one fastener comprises a screw for adjustably securing said first, second and third supports together.

47. The adjustable compression system as recited in claim 45 wherein said at least one fastener couples the first and second support and the compression bodies together.

48. The adjustable compression system as recited in claim 46 wherein said compression body and said second compression body are selected from a supply of a plurality of compression bodies, said plurality of compression bodies comprising different predetermined densities.

49. The adjustable compression system as recited in claim 46 wherein said compression body and said second compression body are selected from a supply of a plurality of compression bodies, said plurality of compression bodies comprising different predetermined shapes.

50. The adjustable compression system as recited in claim 48 wherein said compression body and said second compression body comprise a compressible material such as polyethylene, silicone, or viscoelastic polymer.

51. The adjustable compression system as recited in claim 19 wherein at least one of said first vertebra or said second vertebra is fused to a third vertebra.

52. The adjustable compression system as recited in claim 1 wherein said retainer is posterior of said spinal column.

53. A method for reducing load on a disk, said method comprising the steps of:

mounting a first support on a first vertebra;

mounting a second support on a second vertebra; said first and second mounts defining an area for housing a compression body external to an axis of said spinal cord; and

situating said compression body in said area.

54. The method as recited in claim 53 wherein said method further comprises the step of:

selecting said compression body from a supply of a plurality of compression bodies.

55. The method as recited in claim 54 wherein said plurality of compression bodies comprise different densities.

56. The method as recited in claim 54 wherein said plurality of compression bodies comprise different shapes.

57. The method as recited in claim 53 wherein said method further comprises the steps of:

performing said situating step during a first operation;

removing said compression body and inserting a replacement compression body during a second operation.

58. The method as recited in claim 53 wherein said method further comprises the steps of:

mounting a third support onto said first vertebra and a fourth support on to said second vertebra;

fastening said first support to said third support and second support to said fourth vertebra.

59. The method as recited in claim 58 wherein said first and second mounts comprise a first support and a second support, said method further comprising the step of:

situating a fifth support in operative relationship with at least one of said first and second supports to define a second posterior area for receiving a second compression body.

60. The method as recited in claim 53 wherein said method further comprises the step of:

adjustably securing said first and second mounts and said third support together.

61. The method as recited in claim 60 wherein said method further comprises the step of:

adjustably securing at least one compression body among said first and second support.

62. The method as recited in claim 53 wherein said method further comprises the steps of:

mounting a third mount on said first vertebrae;
mounting a fourth mount on said second vertebrae;
said third and fourth mounts defining a second posterior area for housing a second compression body; and
situating said second compression body in said second posterior area.

63. The method as recited in claim 61 wherein said method further comprises the steps of:

securing at least one bracket between either said first and third mounts or said second and fourth mounts to retain said mounts in a fixed relation relative to each other.

64. An adjustable compression system for reducing a load on at least one lumbar disk, said adjustable compression system comprising:

a retainer for mounting on a first vertebra and a second vertebra of a spinal column, said retainer comprising a retaining area for receiving an artificial body and for supporting said artificial body posterior of said vertebra;

said retainer cooperating with said artificial disk to facilitate reducing load on said at least one lumbar disk when said first and second vertebrae move either toward or away from each other.

65. The adjustable compression system as recited in claim 64 wherein the artificial body is a disk.

66. The adjustable compression system as recited in claim 64 wherein said retainer reduces loading when said first and second vertebrae move toward each other.

67. The adjustable compression system as recited in claim 64 wherein said retainer reduces loading when said first and second vertebrae move away from each other.

68. The adjustable compression system as recited in claim 64 wherein said retainer reduces loading when said first and second vertebrae move either toward or away from each other.

69. The adjustable compression system as recited in claim 64 wherein said retainer comprises:

a first mount for mounting on said first vertebra and a second mount for mounting on said second vertebra, said first mount comprising a first artificial body support and said second mount comprising a second artificial body support;

said first and second artificial body supports cooperating to define said receiving area.

70. The adjustable compression system as recited in claim 69 wherein said first and second mounts detachably receive said first and second artificial body supports after said first and second mounts are mounted on said first and second vertebrae.

71. The adjustable compression system as recited in claim 70 wherein said system comprises at least one fastener for adjustably fastening said first and second artificial body supports to said first and second mounts.

72. The adjustable compression system as recited in claim 70 wherein said system comprises at least one adjustable fastener to permit adjustable loading said artificial body with a predetermined amount of pressure after it is received in the retaining area.

73. The adjustable compression system as recited in claim 72 wherein said predetermined amount of pressure is on the order of the physiological pressures upon the native intervertebral disk.

74. The adjustable compression system as recited in claim 69 wherein said first and second artificial body supports are generally planar.

75. The adjustable compression system as recited in claim 69 wherein said first and second mounts each comprise at least one mounting rod;
said first and second artificial body supports being mounted on said at least one mounting rod such that said artificial body supports are situated in a generally opposed relationship exterior to said spinal column.

76. The adjustable compression system as recited in claim 69 wherein said first artificial body support comprises a first planar member and said second artificial body support comprises a second planar member, said first and second planar members being in a generally parallel relationship after said first and second mounts are mounted on said first and second vertebrae, respectively.

77. The adjustable compression system as recited in claim 76 wherein said first and second generally planar members are situated at a predetermined angle relative to said spinal cord.

78. The adjustable compression system as recited in claim 77 wherein said predetermined angle is acute.

79. The adjustable compression system as recited in claim 77 wherein said predetermined angle faces downward at approximately 30 degrees.

80. The adjustable compression system as recited in claim 64 wherein said artificial body is selected from a supply of a plurality of artificial bodies, said plurality of artificial bodies comprising different predetermined densities.

81. The adjustable compression system as recited in claim 64 wherein said artificial body is selected from a supply of a plurality of artificial bodies, said plurality of artificial bodies comprising different predetermined shapes.

82. The adjustable compression system as recited in claim 69 wherein said system comprises a third mount that cooperates with at least one of said first and second mounts for reducing spinal column loads when said first and second vertebrae move in opposite directions.

83. The adjustable compression system as recited in claim 82 wherein said third mount and at least one of said first or second mounts defines a second artificial body receiving area for receiving a second artificial body.

84. The adjustable compression system as recited in claim 83 wherein said first support comprises a first planar member, said second mount comprises a second planar member, and said third mount comprises a third planar member, said first, second and third mounts being in a generally parallel relationship after said first, second and third supports are mounted on said frame.

85. The adjustable compression system as recited in claim 84 wherein said first, second and third generally planar members are situated at a predetermined angle relative to said spinal cord.

86. The adjustable compression system as recited in claim 85 wherein said predetermined angle is an acute angle.

87. The adjustable compression system as recited in claim 76 wherein said predetermined angle faces downward at approximately 30 degrees.

88. The adjustable compression system as recited in claim 84 wherein said system comprises at least one fastener for adjustably fastening said first, second and third mounts together to permit loading said first and second artificial bodies with a predetermined amount of pressure.

89. The adjustable compression system as recited in claim 88 wherein said adjustable tensioner comprises a screw for adjustably securing said first, second and third mounts together.

90. The adjustable compression system as recited in claim 83 wherein said artificial body and said second artificial body are selected from a supply of a plurality of artificial bodies, said plurality of artificial bodies comprising different predetermined densities.

91. The adjustable compression system as recited in claim 83 wherein said artificial body and said second artificial body are selected from a supply of a plurality of artificial bodies, said plurality of artificial bodies comprising different predetermined shapes.

92. The adjustable compression system as recited in claim 90 wherein said artificial body and said second artificial body comprise a compressible material such as polyethylene, silicone, or viscoelastic polymer.

93. The adjustable compression system as recited in claim 91 wherein said predetermined shapes comprises circular, triangular, elliptical or polygonal.

94. The adjustable compression system as recited in claim 83 wherein at least one of said first vertebra or said second vertebra is fused to a third vertebra.

95. The adjustable compression system as recited in claim 64 wherein said adjustable system comprises:

a second retainer for mounting on said first vertebrae and second vertebrae, said second retainer comprising a second retaining area for receiving a second artificial disk and supporting said second artificial disk posterior of said vertebrae.

96. The adjustable compression system as recited in claim 95 wherein said first retainer and said second retainer comprise at least one bracket for coupling to said first and second retainer in order to retain said first and second retainer in a fixed position relative to each other.

97. The adjustable compression system as recited in claim 95 wherein said first retainer and said second retainer comprise a pair of brackets for coupling to said first and second retainer in order to retain said first and second retainer in a fixed position relative to each other.

98. An extra-axial spinal artificial disk method comprising the step of placing an artificial elastic or articulating mechanism that replicates or augments the function of a native disk in any location other than a native disk space or a normal axis of the spine.

99. An artificial disk that replicates or augments the function of a native disk in any location other than a native disk space or a normal axis of the spine, comprising:

- a body; and

- an elastomeric or articulating mechanism in the body.

100. An adjustable compression system for reducing the load on at least one lumbar disk, said adjustable compression system comprising:

- a retainer for retaining a first compression body posterior of said spinal column and for facilitating reducing load on at least lumbar disk in the spinal column; and

- a second retainer for mounting on the spinal column also for facilitating reducing load on said at least one lumbar disk;

- wherein said first and second retainers are not located along an axis of said spinal column.

101. The adjustable compression system as recited in claim 100 wherein the adjustable compression system further comprises;

- at least one bracket coupled to said first and second retainers for securing said first and second retainers in a fixed position relative to each other.

102. The adjustable compression system as recited in claim 100 wherein the adjustable compression system further comprises;

a plurality of brackets coupled to said first and second retainers for securing said first and second retainers in a fixed position relative to each other.

103. The adjustable compression system as recited in claim 101 wherein at least one of said first or said second retainer comprises:

a first mount for mounting on said first vertebra and a second mount for mounting on said second vertebra, said first mount comprising a first artificial body support and said second mount comprising a second artificial body support;

said first and second artificial body supports cooperating to define said receiving area.

104. The adjustable compression system as recited in claim 103 wherein said first and second mounts detachably receive said first and second artificial body supports after said first and second mounts are mounted on said first and second vertebrae.

105. The adjustable compression system as recited in claim 104 wherein said system comprises at least one fastener for adjustably fastening said first and second artificial body supports to said first and second mounts.

106. The adjustable compression system as recited in claim 104 wherein said system comprises at least one adjustable fastener to permit adjustable loading said artificial body with a predetermined amount of pressure after it is received in the retaining area.

107. The adjustable compression system as recited in claim 106 wherein said predetermined amount of pressure is on the order of the physiological pressures upon the native intervertebral disk.

108. The adjustable compression system as recited in claim 103 wherein said first and second artificial body supports are generally planar.

109. The adjustable compression system as recited in claim 103 wherein said first and second mounts each comprise at least one mounting rod;
said first and second artificial body supports being mounted on said at least one mounting rod such that said artificial body supports are situated in a generally opposed relationship exterior to said spinal column.

110. The adjustable compression system as recited in claim 103 wherein said first artificial body support comprises a first planar member and said second artificial body support comprises a second planar member, said first and second planar members being in a generally parallel relationship after said first and second mounts are mounted on said first and second vertebrae, respectively.

111. The adjustable compression system as recited in claim 110 wherein said first and second generally planar members are situated at a predetermined angle relative to said spinal cord.

112. The adjustable compression system as recited in claim 111 wherein said predetermined angle is acute.

113. The adjustable compression system as recited in claim 111 wherein said predetermined angle faces downward at approximately 30 degrees.

114. The adjustable compression system as recited in claim 100 wherein said artificial body is selected from a supply of a plurality of artificial bodies, said plurality of artificial bodies comprising different predetermined densities.

115. The adjustable compression system as recited in claim 100 wherein said artificial body is selected from a supply of a plurality of artificial bodies, said plurality of artificial bodies comprising different predetermined shapes.

116. The adjustable compression system as recited in claim 103 wherein said system comprises a third mount that cooperates with at least one of said first and second mounts for reducing spinal column loads when said first and second vertebrae move in opposite directions.

117. The adjustable compression system as recited in claim 116 wherein said third mount and at least one of said first or second mounts defines a second artificial body receiving area for receiving a second artificial body.

118. The adjustable compression system as recited in claim 117 wherein said first support comprises a first planar member, said second mount comprises a second planar member, and said third mount comprises a third planar member, said first, second and third mounts being in a generally parallel relationship after said first, second and third supports are mounted on said frame.

119. The adjustable compression system as recited in claim 118 wherein said first, second and third generally planar members are situated at a predetermined angle relative to said spinal cord.

120. The adjustable compression system as recited in claim 119 wherein said predetermined angle is an acute angle.

121. The adjustable compression system as recited in claim 120 wherein said predetermined angle faces downward at approximately 30 degrees.

122. The adjustable compression system as recited in claim 118 wherein said system comprises at least one fastener for adjustably fastening said first, second and third mounts together to permit loading said first and second artificial bodies with a predetermined amount of pressure.

123. The adjustable compression system as recited in claim 122 wherein said adjustable tensioner comprises a screw for adjustably securing said first, second and third mounts together.

124. The adjustable compression system as recited in claim 117 wherein said artificial body and said second artificial body are selected from a supply of a plurality of artificial bodies, said plurality of artificial bodies comprising different predetermined densities.

125. The adjustable compression system as recited in claim 117 wherein said artificial body and said second artificial body are selected from a supply of a plurality of artificial bodies, said plurality of artificial bodies comprising different predetermined shapes.

126. The adjustable compression system as recited in claim 124 wherein said artificial body and said second artificial body comprise a compressible material such as polyethylene, silicone, or viscoelastic polymer.

127. The adjustable compression system as recited in claim 125 wherein said predetermined shapes comprises circular, triangular, elliptical or polygonal.

128. The adjustable compression system as recited in claim 117 wherein at least one of said first vertebra or said second vertebra is fused to a third vertebra.